

CLAIMS:

- 1: A fusion protein comprising a sequence from a major coat protein of a papovavirus, in which the N-terminal of the sequence derived from the major coat protein is fused to a further peptide sequence.
5
- 2: A virus-like particle comprising a fusion protein according to claim 1.
- 3: A virus-like particle according to claim 2, comprising a sequence from a major coat protein L1 of a papillomavirus, e.g. of HPV type 16 or 18.
10
- 4: A virus-like particle according to claim 3, comprising either (i) a full sequence of a human papillomavirus L1 protein, or (ii) a sequence from a human papillomavirus L1 protein having an N-terminal deletion of up to 10 amino-acids, or
15 (iii) a sequence from a human papillomavirus L1 protein with an aminoacid substitution mutation, optionally in each case with a C-terminal deletion of the L1 sequence.
- 5: A virus-like particle according to claim 3, wherein said further peptide sequence is an immunogenic sequence, e.g. a sequence derived from a protein of a pathogen such as a virus.
20
- 6: A virus-like particle according to claim 3, wherein said further peptide sequence provides a binding domain for the (affinity) purification of the virus-like particle.
25
- 7: A fusion protein according to claim 1 or a virus-like particle according to claim 3, wherein fused to the N-terminal of a sequence from a papillomavirus L1 protein is a sub-sequence from a further papillomavirus protein, e.g. an early protein such as HPV E1 or E2, E6 or E7.
30
- 8: A fusion protein according to claim 1 or a virus-like particle according to claim 2 wherein said peptide sequence is long enough to provide at least one epitope of the further protein, e.g. about 15 residues, for example residues 45-60 of a HPV16
35 E1 aa sequence, alternatively or additionally residues 384-403 of a HPV 16 aa

sequence.

9: A fusion protein according to claim 1 or a virus-like particle according to claim 2 wherein fused at the N-terminal of the major coat protein is a short peptide sequence e.g. of about 6-20 aminoacids, e.g. a his-tag or an epitope recognisable by an antibody.

10: A method of purifying a virus-like particle according to claim 9, by affinity purification on a solid phase with complementary affinity, e.g. nickel-NTA-agarose where the peptide comprises a his-tag.

11: Modified virus-like particles of papovaviruses that (a) retain the native conformation of the structure of the corresponding VLPs based on major coat protein of corresponding unmodified sequence while also (b) presenting to the immune system of a subject immunised with the modified VLPs an epitope present on an N-terminal extension of the major coat protein sequence.

12: Polynucleotides corresponding encoding a fusion protein according to claim 1, and expression vectors, plasmids, vectors and cells containing such polynucleotides.

13: A method of producing fusion proteins according to claim 1 and virus-like particles according to claim 2 which comprises expressing a corresponding encoding polynucleotide according to claim 12 in a host cell expression system, e.g. a eukaryotic expression system such as a baculovirus expression system.